Complete Summary

GUIDELINE TITLE

Chronic neck pain.

BIBLIOGRAPHIC SOURCE(S)

Daffner RH, Dalinka MK, Alazraki NP, DeSmet AA, El-Khoury GY, Kneeland JB, Manaster BJ, Pavlov H, Rubin DA, Steinbach LS, Weissman BN, Haralson RH III, Expert Panel on Musculoskeletal Imaging. Chronic neck pain. [online publication]. Reston (VA): American College of Radiology (ACR); 2005. 7 p. [21 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Daffner RH, Dalinka MK, Alazraki N, Berquist TH, DeSmet AA, el-Khoury GY, Goergen TG, Keats TE, Manaster BJ, Newberg A, Pavlov H, Schweitzer ME, Haralson RH, McCabe JB. Chronic neck pain. American College of Radiology. ACR Appropriateness Criteria. Radiology 2000 Jun;215(Suppl):345-56.

The appropriateness criteria are reviewed annually and updated by the panels as needed, depending on introduction of new and highly significant scientific evidence.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Chronic neck pain

GUIDELINE CATEGORY

Diagnosis
Evaluation

CLINICAL SPECIALTY

Family Practice
Internal Medicine
Neurology
Nuclear Medicine
Orthopedic Surgery
Radiology

INTENDED USERS

Health Plans
Hospitals
Managed Care Organizations
Physicians
Utilization Management

GUIDELINE OBJECTIVE(S)

To evaluate the appropriateness of initial radiologic examinations for patients with chronic neck pain

TARGET POPULATION

Patients with chronic neck pain

INTERVENTIONS AND PRACTICES CONSIDERED

1. Radiography (anteroposterior, lateral, open mouth, oblique, flexion/extension)
2. Computed tomography (CT)
3. Magnetic resonance imaging (MRI) - routine
4. Myelogram
    - Routine
    - With computed tomography
5. Nuclear medicine (NUC), bone scan
6. Radionuclide bone scan
7. Facet injection/arthrography

Note: Discography was considered but not recommended.

MAJOR OUTCOMES CONSIDERED

Utility of radiologic examinations in differential diagnosis

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The guideline developer performed literature searches of peer-reviewed medical journals, and the major applicable articles were identified and collected.

NUMBER OF SOURCE DOCUMENTS

The total number of source documents identified as the result of the literature search is not known.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Not Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not stated

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

One or two topic leaders within a panel assume the responsibility of developing an evidence table for each clinical condition, based on analysis of the current literature. These tables serve as a basis for developing a narrative specific to each clinical condition.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus (Delphi)

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Since data available from existing scientific studies are usually insufficient for meta-analysis, broad-based consensus techniques are needed for reaching agreement in the formulation of the appropriateness criteria. The American College of Radiology (ACR) Appropriateness Criteria panels use a modified Delphi technique to arrive at consensus. Serial surveys are conducted by distributing questionnaires to consolidate expert opinions within each panel. These questionnaires are distributed to the participants along with the evidence table

and narrative as developed by the topic leader(s). Questionnaires are completed by the participants in their own professional setting without influence of the other members. Voting is conducted using a scoring system from 1 to 9, indicating the least to the most appropriate imaging examination or therapeutic procedure. The survey results are collected, tabulated in anonymous fashion, and redistributed after each round. A maximum of three rounds is conducted and opinions are unified to the highest degree possible. Eighty (80) percent agreement is considered a consensus. This modified Delphi technique enables individual, unbiased expression, is economical, easy to understand, and relatively simple to conduct.

If consensus cannot be reached by this Delphi technique, the panel is convened and group consensus techniques are utilized. The strengths and weaknesses of each test or procedure are discussed and consensus reached whenever possible. If "No consensus" appears in the rating column, reasons for this decision are added to the comment sections.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

ACR Appropriateness Criteria™

Clinical Condition: Chronic Neck Pain

Variant 1: Patient of any age, without or with a history of previous trauma, first study.

Radiologic Exam Procedure	Appropriateness Rating	Comments

Radiologic Exam Procedure	Appropriateness Rating	Comments
X-ray, cervical spine, AP, lateral, open mouth	9	
X-ray, cervical spine, AP, lateral, open mouth, oblique, flexion/extension	2	
X-ray, cervical spine, flexion/extension only	2	
X-ray, cervical spine, AP, lateral, open mouth, oblique	No Consensus	At discretion of clinician.
CT, cervical spine	2	
MRI, cervical spine, routine	2	
Myelogram, cervical spine, routine	2	
Myelogram, cervical spine, with CT	2	
NUC, bone scan	2	
Facet injection/arthrography, cervical spine	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 2: Patients of any age. History of previous malignancy. First study.

Radiologic Exam Procedure	Appropriateness Rating	Comments
X-ray, cervical spine, AP, lateral, open mouth	9	

Radiologic Exam Procedure	Appropriateness Rating	Comments
X-ray, cervical spine, AP, lateral, open mouth, oblique, flexion/extension	2	
X-ray, cervical spine, flexion/extension only	2	
X-ray, cervical spine, AP, lateral, open mouth, oblique	2	
Computed tomography, cervical spine	2	
MRI, cervical spine, routine	No Consensus	
Myelogram, cervical spine, routine	2	
Myelogram, cervical spine, with CT	2	
NUC, bone scan	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 3: Patients of any age. History of previous neck surgery. First study.

Radiologic Exam Procedure	Appropriateness Rating	Comments
X-ray, cervical spine, AP, lateral, open mouth	9	
X-ray, cervical spine, AP, lateral, open mouth, oblique, flexion/extension	2	
X-ray, cervical spine,	2	

Radiologic Exam Procedure	Appropriateness Rating	Comments
flexion/extension only		
X-ray, cervical spine, AP, lateral, open mouth, oblique	2	
CT, cervical spine	2	
MRI, cervical spine, routine	2	
Myelogram, cervical spine, routine	2	
Myelogram, cervical spine, with CT	2	
NUC, bone scan	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 4: Radiographs normal. No neurologic findings.

Radiologic Exam Procedure	Appropriateness Rating	Comments
CT, cervical spine	2	
MRI, cervical spine, routine	2	
Myelogram, cervical spine, routine	2	
Myelogram, cervical spine, with CT	2	
NUC, bone scan	2	
Facet injection/arthrography, cervical spine	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9		

Radiologic Exam Procedure	Appropriateness Rating	Comments
1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 5: Radiographs normal. Neurologic signs or symptoms present.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI, cervical spine, routine	9	
CT, cervical spine	2	
Myelogram, cervical spine, routine	2	
Myelogram, cervical spine, with CT	2	Indicated if patient cannot undergo MRI.
NUC, bone scan	2	
Facet injection/arthrography, cervical spine	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 6: Radiographs show spondylosis. No neurologic findings.

Radiologic Exam Procedure	Appropriateness Rating	Comments
CT, cervical spine	2	
MRI, cervical spine, routine	2	
Myelogram, cervical spine, routine	2	
Myelogram, cervical	2	

Radiologic Exam Procedure	Appropriateness Rating	Comments
spine, with CT		
NUC, bone scan	2	
Facet injection/arthrography, cervical spine	2	
Discography, cervical spine	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 7: Radiographs show spondylosis. Neurologic signs or symptoms present.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI, cervical spine, routine	9	
CT, cervical spine	2	
Myelogram, cervical spine, routine	2	
Myelogram, cervical spine, with CT	2	Indicated if MRI cannot be performed.
NUC, bone scan	2	
Facet injection/arthrography, cervical spine	2	
Discography, cervical spine	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 8: Radiographs show old trauma. No neurologic findings.

Radiologic Exam Procedure	Appropriateness Rating	Comments
CT, cervical spine	2	
MRI, cervical spine, routine	2	
Myelogram, cervical spine, routine	2	
Myelogram, cervical spine, with CT	2	
NUC, bone scan	2	
Facet injection/arthrography, cervical spine	2	
Discography, cervical spine	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 9: Radiographs show old trauma. Neurologic signs or symptoms present.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI, cervical spine, routine	9	
CT, cervical spine	2	
Myelogram, cervical spine, routine	2	
Myelogram, cervical spine, with CT	2	Indicated if MRI cannot be performed.
NUC, bone scan	2	
Facet injection/arthrography,	2	

Radiologic Exam Procedure	Appropriateness Rating	Comments
cervical spine		
Discography, cervical spine	1	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 10: Radiographs show bone or disc margin destruction.

Radiologic Exam Procedure	Appropriateness Rating	Comments
MRI, cervical spine, routine	9	
CT, cervical spine	2	
Myelogram, cervical spine, routine	2	
Myelogram, cervical spine, with CT	2	
NUC, bone scan	2	
Appropriateness Criteria Scale 1 2 3 4 5 6 7 8 9 1 = Least appropriate 9 = Most appropriate		

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Recommendations

Patients of any age with chronic neck pain without or with a history of remote trauma should initially undergo a 3-view (AP, lateral, open mouth) radiographic examination. Oblique radiographs may be performed at the discretion of the attending physician.

Patients with a history of previous malignancy should initially undergo a 3-view radiographic examination. Radionuclide bone scanning should not be the initial procedure of choice.

Patients with a history of neck surgery in the remote past should initially undergo a three view radiographic examination.

Patients with normal radiographs and no neurologic signs or symptoms need no further imaging.

Patients with normal radiographs and neurologic signs or symptoms should undergo MR imaging. If there is a contraindication to the MR examination such as a cardiac pacemaker or severe claustrophobia, CT myelography, preferably using spiral technology and multiplanar reconstruction is recommended.

Patients with radiographic evidence of cervical spondylosis or of previous trauma without neurologic signs or symptoms need no further imaging.

Patients with radiographic evidence of cervical spondylosis or of previous trauma and neurologic signs or symptoms should undergo MR imaging. If there is a contraindication to MR, CT myelography is recommended.

Patients with radiographic evidence of bone or of disc margin destruction should undergo MR imaging. If an epidural abscess is suspected, the examination should be performed with intravenous contrast. CT is indicated only if MR cannot be performed.

Facet injection and arthrography are useful for patients with multilevel disease diagnosed by any imaging modality to identify the specific level(s) producing symptoms.

Discography is not recommended.

Summary

There are no existing guidelines for the evaluation of the patient with chronic neck pain.

All investigators generally agree that plain radiographs should be the initial study performed for evaluating these patients. However, there is no consensus on exactly which views should be obtained for the initial study. The guideline developers recommend a basic 3-view study, with oblique radiographs added at the discretion of the attending physician.

MR imaging should be performed on all patients who have chronic neck pain with neurologic signs, or symptoms, or both. If there is a contraindication to MR, CT myelography is recommended.

The use of additional imaging procedures should be determined by case manner, and the evaluation of patients with chronic neck pain should follow this "tailor-made" approach. Discography is not recommended.

Abbreviations

- AP, anteroposterior

- CT, computed tomography
- MRI, magnetic resonance imaging
- NUC, nuclear medicine

CLINICAL ALGORITHM(S)

Algorithms were not developed from criteria guidelines.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based on analysis of the current literature and expert panel consensus.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate selection of radiologic exam procedures to evaluate patients with chronic neck pain

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

An American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists, and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those exams generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Personal Digital Assistant (PDA) Downloads

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Daffner RH, Dalinka MK, Alazraki NP, DeSmet AA, El-Khoury GY, Kneeland JB, Manaster BJ, Pavlov H, Rubin DA, Steinbach LS, Weissman BN, Haralson RH III, Expert Panel on Musculoskeletal Imaging. Chronic neck pain. [online publication]. Reston (VA): American College of Radiology (ACR); 2005. 7 p. [21 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1998 (revised 2005)

GUIDELINE DEVELOPER(S)

American College of Radiology - Medical Specialty Society

SOURCE(S) OF FUNDING

American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria.™

GUIDELINE COMMITTEE

Committee on Appropriateness Criteria, Expert Panel on Musculoskeletal Imaging

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Panel Members: Richard H. Daffner, MD; Murray K. Dalinka, MD; Naomi P. Alazraki, MD; Arthur A. DeSmet, MD; George Y. El-Khoury, MD; John B. Kneeland, MD; B.J. Manaster, MD, PhD; Helene Pavlov, MD; David A. Rubin, MD; Lynne S. Steinbach, MD; Barbara N. Weissman, MD; Robert H. Haralson III, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Daffner RH, Dalinka MK, Alazraki N, Berquist TH, DeSmet AA, el-Khoury GY, Goergen TG, Keats TE, Manaster BJ, Newberg A, Pavlov H, Schweitzer ME, Haralson RH, McCabe JB. Chronic neck pain. American College of Radiology. ACR Appropriateness Criteria. Radiology 2000 Jun;215(Suppl):345-56.

The appropriateness criteria are reviewed annually and updated by the panels as needed, depending on introduction of new and highly significant scientific evidence.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the American College of Radiology (ACR) Web site.

Appropriateness Criteria Anytime, Anywhere™ (PDA application). Available from the ACR Web site.

Print copies: Available from the American College of Radiology, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- ACR Appropriateness Criteria.™ Background and development. Reston (VA): American College of Radiology; 2 p. Electronic copies: Available in Portable Document Format (PDF) from the American College of Radiology (ACR) Web site.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on May 6, 2001. The information was verified by the guideline developer as of June 29, 2001. This NGC summary was updated by ECRI on January 27, 2006.

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